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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,460	06/26/2003	Nayan H. Joshi	ATOTP0104US	3492

7590 05/15/2006

Armand P. Boisselle  
Renner, Otto, Boisselle & Sklar, LLP  
Nineteenth Floor  
1621 Euclid Avenue  
Cleveland, OH 44115

EXAMINER
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BAREFORD, KATHERINE A

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 05/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/606,460

Applicant(s)

JOSHI ET AL.

Examiner

Katherine A. Bareford

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-72 is/are pending in the application.
- 4a) Of the above claim(s) 53 and 64 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 28-31, 36-42, 50-52, 54-63 and 65-72 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

*Claims 1-27, 32-35, 43-49 are canceled*

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Response to Appeal Brief***


1. In view of the Appeal Brief filed on March 24, 2006, PROSECUTION IS HEREBY REOPENED. New Grounds of Rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

  
**TIMOTHY MEEKS**  
**SUPERVISORY PATENT EXAMINER**

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Art Unit: 1762

3. <sup>54-63 and 65-72</sup> Claims 28-31, 36-42, and 50-52 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for an inhibitor selected from the group consisting of nitrogen containing disulfides, alkali metal thiocyanates, nitrogen-containing heterocyclic compounds, mercapto substituted nitrogen-containing heterocyclic compounds, thioureas, thiocarbamates, thiosemicarbazides, compounds of the formula  $R_2N-C(S)Y$  (where each R is independently hydrogen or an alkyl, alkenyl or aryl group and Y is  $XR^1$ ,  $NR_2$  or  $N(H)R_2$ , where X is O or S, and  $R^1$  is hydrogen or an alkali metal) and mixtures thereof does not reasonably provide enablement for at least one inhibitor containing one or more nitrogen atoms, one or more sulfur atoms, or both sulfur and nitrogen atoms. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

Claims 28, 36, 40 and 60 (the independent claims) recite the general requirement of "at least one inhibitor containing one or more nitrogen atoms, one or more sulfur atoms, or both sulfur and nitrogen atoms." This encompasses any "at least one inhibitor containing one or more nitrogen atoms, one or more sulfur atoms, or both sulfur and nitrogen atoms." However, the specification only teaches the use of the inhibitors that are selected from the group consisting of nitrogen containing disulfides, alkali metal thiocyanates, nitrogen-containing heterocyclic compounds, mercapto substituted nitrogen-containing heterocyclic compounds, thioureas, thiocarbamates,

Art Unit: 1762

thiosemicarbazides, compounds of the formula  $R_2N-C(S)Y$  (where each R is independently hydrogen or an alkyl, alkenyl or aryl group and Y is  $XR^1$ ,  $NR_2$  or  $N(H)R_2$ , where X is O or S, and  $R^1$  is hydrogen or an alkali metal) and mixtures thereof. Such a limited disclosure does not support the breadth of the instant claims.

While claims 52, 55, 56, 63, 65-67 and 72 refer to specific inhibitors, these do not prevent the broad requirements of the parent claims from still being present because they describe a specific inhibitor being using and the parent claims indicate that one or more inhibitors can be used.

Furthermore, while claim 52 provides for using the generic "thioacid" or "thioalcohol", the specification does not provide any discussion of using such generic groupings and thus the claim is not supported for the broad group of those materials either.

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the

various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 28, 36, 40, 50-52, 54, 57-63, 65 and 68-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heiman (US 2580773) in view of Eckles (US 5405523).

Claims 28, 36, 40, 60Heiman teaches a process for depositing zinc or a zinc alloy protective coating on aluminum or aluminum based alloy substrates. column 1, lines 1-20, column 2, lines 30-40 and column 6, lines 60-75. Heiman teaches immersing an aluminum or aluminum based alloy substrate in an aqueous acidic immersion plating solution. Column 2, lines 30-50 and column 3, line 45 through column 4, line 5 (the amount of acid added would make the bath acidic). The bath can contain zinc ions and fluoride ions. Column 3, lines 45-50. The bath can also contain nickel and/or cobalt ions. Column 2, lines 30-40 and column 6, lines 60-75. The solution can be free of cyanide ions, as no cyanide is described of being present. See column 3, lines 45-60 and column 6, lines 60-75. The substrate is immersed in the bath for a period of time to deposit the desired coating. Column 5, lines 50-60. Then the coated substrate is removed from the immersion plating. Column 5, lines 50-60. The bath can be used to perform immersion plating without electroplating or it can be used to perform

electroplating. Column 3, lines 45-60, column 4, lines 15-20, and column 6, lines 70-75 (the bath can be used with or without current). The HF acid can be present in the solution in an amount of from 0.2 N to 2.5 N (1.0 N = 35.0 ml/l of HF of 48% acid). Column 3 line 65 through column 4, line 10.

Claim 40: after the substrate is plated with the zinc material, other materials can be electrodeposited on the plated substrate. Column 7, lines 20-30.

Claim 51, 69: the solution can contain other metal ions, including iron or manganese. Column 2, lines 35-40.

Claim 59, 70: the solution can be free of aliphatic amines and aliphatic hydroxylamines, as none is described as being present. See column 3, lines 45-60 and column 6, lines 60-75.

Heiman teaches all the features of these claims except (1) the pH of the solution, (2) the presence of the inhibitor, (3) the precise amounts of each material in the bath (claims 36, 57, 58, 60), (4) the presence of complexing agents (claim 50, 61, 62, 71), (5) the inhibitor material (claim 52, 54, 63, 65).

However, Eckles teaches a method for depositing a zinc alloy protective coating on metal substrates. Column 1, lines 45-55. The method is by electroplating. Column 1, lines 45-55. The method includes immersing a metal substrate in an aqueous acid plating solution having a pH of from about 3.5 to about 6.2. Column 2, lines 40-46. The bath can comprise zinc ions, and nickel and/or cobalt ions. Column 2, lines 25-30 and column 4, lines 10-20. The bath also contains an "inhibitor" material containing

nitrogen and/or sulfur atoms (the brightener). Column 2, line 46 through column 3, line 8. The substrate is immersed for a period of time sufficient to deposit the coating. column 6, lines 40-45. The substrate is removed from the bath, because the substrate must inherently be removed from the bath for use. The solution can be free of cyanide. Column 6, lines 25-40. The solution can contain 4--50 g/l of zinc ions. Column 4, lines 45-50. The solution can contain about 0.02--20 g/l alloying ions, such as nickel and/or cobalt. Column 4, lines 53-68. The solution can contain about 0.05--2 g/l of the nitrogen containing compound. Column 4, lines 5-10. The solution can contain acetate (one of applicant's claimed complexing agents). Column 4, lines 36-38. The nitrogen containing material can be a nitrogen containing heterocyclic compound. Column 2, lines 60-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Heiman to use the pH taught by Eckles in the bath with an expectation of desirable coating results, because Heiman teaches to provide an aqueous acid bath with zinc ions for immersion or electrolytic plating and that the acid in the bath can be 0.2 to 5 N, and Eckles teaches that in an aqueous acidic bath with zinc ions for electroplating the desirable pH is 3.5 to 6.2. One of ordinary skill in the art would optimize within that range to find the most desirable pH for the particular use desired. It would further have been obvious to modify Heiman to provide the brightener (inhibitor) material and complexing material in the bath as suggested by Eckles with an expectation of desirably bright coated material, because Heiman teaches



to provide an aqueous acid bath with zinc ions for immersion or electrolytic plating, and Eckles teaches that in an aqueous acidic bath with zinc ions for electroplating it is desirable to provide a brightener and complexing material to provide a desirable appearance to the coating, and this desire for a bright appearance would be present for electroplating or immersion plating. It would further have been obvious to optimize the ranges of material taught by Heiman in view of Eckles to provide the optimum amounts of materials for the precise purpose of the article to be coated, because both references teach desirable ranges of amounts of materials to be used in the bath and to provide the optimum for the purpose being used.

7. Claims 29-31, 37-39 and 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heiman in view of Eckles as applied to claims 28, 36, 40, 50-52, 54, 57-63, 65 and 68-71 above, and further in view of Haydu et al (US 5182006).

Heiman in view of Eckles teaches all the features of these claims except the precise cleaning process. Heiman teaches that prior to coating the article is first thoroughly degreased and cleaned so as to remove any grease, dirt or other undesirable foreign materials on the surface. Column 3, lines 5-10. The surface is also treated prior to coating with acid. Column 3, lines 15-25. Cleaning can be performed with an alkaline cleaner. Column 3, lines 40-45. After cleaning the article can be water rinsed. Column 3, lines 20-27.

Haydu teaches that it is conventional to prepare aluminum substrates for zincating by alkaline cleaning followed by a cold water rinse, then etching followed by a water rise, then desmutting followed by a rinse, and then zincate coating by an immersion zinc bath. Column 2, lines 5-20. Haydu also teaches that the zinc coating bath also functions as an etching solution. Column 32, lines 25-30. It is also known follow the first zincate coating with a second zincate coating. Column 2, lines 30-40. Cleaning can be done with an alkaline cleaner. Column 4, lines 1-10. Etching can be done with an acid etchant. Column 4, lines 10-20.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Heiman in view of Eckles to use the full cleaning process taught by Haydu in order to provide a fully prepared substrate for coating because Heiman in view of Eckles teaches a zincate plating process and Haydu teaches a cleaning process to fully prepare a substrate for zinc plating. The rinsing of the immersion plated article would be suggested as further treatment is to be provided.

8. Claims 55, 56, 66, 67 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heiman in view of Eckles as applied to claims 28, 36, 40, 50-52, 54, 57-63, 65 and 68-71 above, and further in view of McCoy et al (US 4356067).

Heiman in view of Eckles teaches all the features of these claims except the precise inhibitor (brightener) material.

McCoy teaches that a known brightener for use in a zinc plating solution is 2-mercaptobenzimidazole. Column 2, lines 1-10 and column 7, lines 30-40.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Heiman in view of Eckles to use a further known brightener as taught by McCoy in order to provide a desirably bright coating because Heiman in view of Eckles teaches a zincate plating process with brightener and McCoy teaches a known brightener for zinc plating.

9. The previous rejections of the claims using the combination of Eckles and Suzuki, Eckles and Suzuki in view of Haydu, Eckles and Suzuki in view of GB 1,263,351, Eckles and Suzuki in view of GB 1,263,351 and Haydu, and Eckles and Suzuki in view of McCoy are withdrawn due to the provision of the new rejections above.

10. Claims 53 and 64 remain withdrawn as drawn to a non-elected invention.

### ***Response to Arguments***

11. Applicant's arguments with respect to claims 28-31, 36-42, 50-52, 54-63 and 65-72 have been considered but are moot in view of the new ground(s) of rejection.


### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
KATHERINE BAREFORD  
PRIMARY EXAMINER